4.7

Transformations

Name _____ **Date** _____ **Period** _____

Determine whether each function is even, odd or neither. Show work!

1. $f(x) = -3x^4$

2. $f(x) = 2x^3$

3. $f(x) = 6x^3 - x^2$

4. $f(x) = \sqrt{x^2 + 1}$

Describe how the graph of the given function can be transformed into the equations for a-c.

5. $f(x) = x^2$

a) $y = -x^2$

b) $y = \frac{1}{2}x^2$

c) $y = x^2 + 5$

6. $f(x) = |x|$

a) $y = -3|x| + 4$

b) $y = |x - 7| + 2$

c) $y = \frac{1}{4}|x + 1|$

7. $f(x) = \sqrt{x}$

a) $y = \sqrt{x+5} - 1$

b) $y = \sqrt{2x} + 7$

c) $y = \frac{1}{3}\sqrt{x-1}$

8. $f(x) = \cos x$

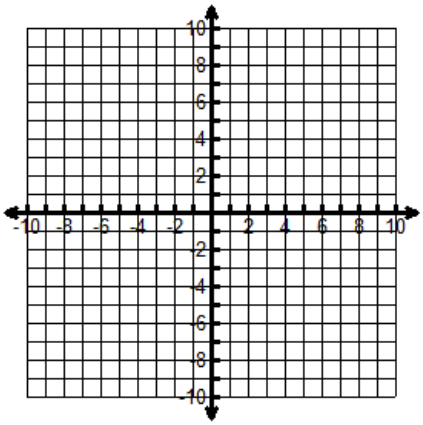
a) $y = -2\cos x$

b) $y = \cos\left(\frac{1}{3}x\right)$

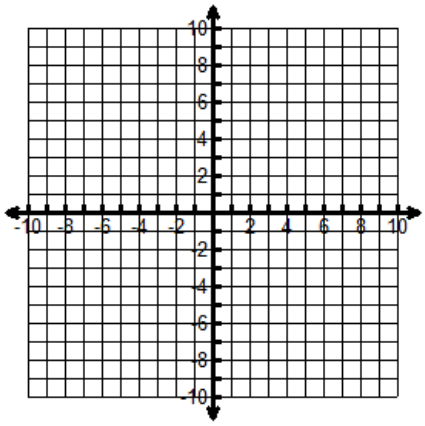
c) $y = \cos x + 2$

Sketch the graphs of each function by hand. (Make a table if necessary.)

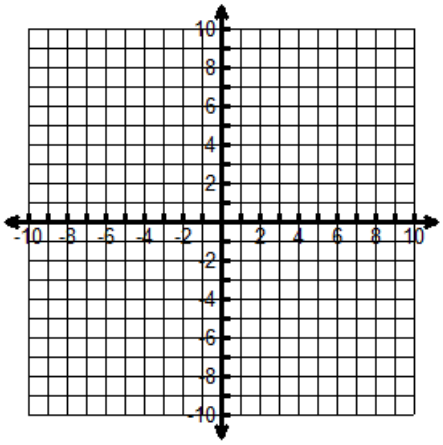
9. $f(x)=\sqrt[3]{x+2}$



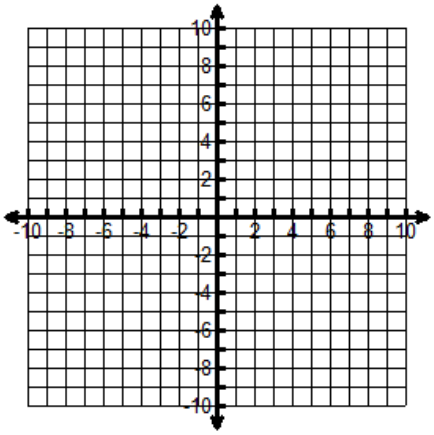
10. $f(x)=2\sqrt[3]{x}-3$



11. $f(x)=-\sqrt[3]{x-2}$



12. $f(x)=-2|x-1|+2$



Find the equation of the reflection of *f* across the a) x-axis and b) the y-axis.

13. $f(x)=x^3-2x^2-3x+5$

14. $f(x)=3\sqrt{x+2}-5$

15. $f(x)=\sqrt[3]{27x}$

16. $f(x)=-2|x-4|$

Transform the function by a) a vertical shrink by a factor of 1/2, and b) a horizontal stretch by a factor of 3.

17. $f(x)=x^3-2x$

18. $f(x)=x^2+4x-6$

Describe a basic parent function and a sequence of transformations that can be used to produce a graph of the given function.

19. $f(x)=-2(x-1)^2+5$

20. $f(x)=(5x)^2-3$

Write the equation for the new function that is obtained from the given transformations on the parent function.

21. $f(x)=\sqrt[3]{x}$: a vertical stretch by a factor of 2, horizontal shift left 3.

22. $f(x)=|x|$: a shift left 2 units, then a horizontal stretch by a factor of 3, then a shift up 4 units.